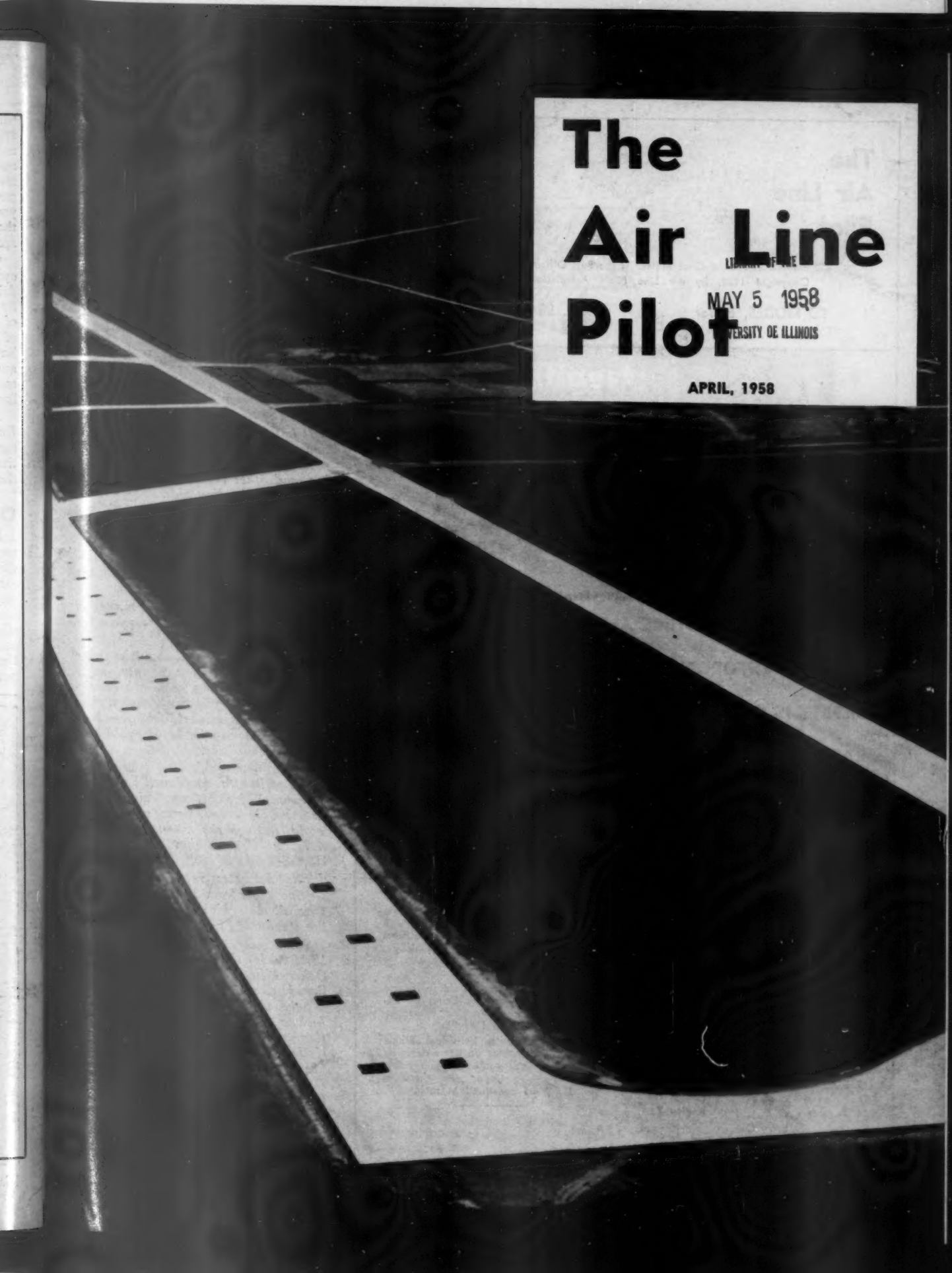

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ED MODES, Editor AL LEACH, Asst. Editor

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(Special Air Safety Forum Edition)

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On the Cover

This aerial view of the new International Airport at Bogota, Colombia, is an outstanding example of nations in the free world attempting to standardize air carrier operations in the interests of safety for all.

Dedicated during the recent conferences of the International Federation of Air Line Pilots Associations in Bogota, the new airport will be one of the best in the world.

It has 12,500 foot runways, a centerline approach light system, flush-mounted, narrow-gauge runway lighting, and other completely modern approach and landing aids.

C. N. Sayen, president of ALPA and also of IFALPA, said on his return from the conference that "it is encouraging to note that more and more importance is being attached to the international aspects of aviation.

"It is no longer solely a matter of national concern, but is a world wide factor.

"With pilots from all countries flying freely and continuously into other countries and using each others' aircraft, airports, equipment, communication and navigational aids, the least common denominator becomes the level of safety.

Airport standards, such as established at Bogota, could well be used as an example for "jet age," airport construction in other parts of the free world, through the International Civil Aviation Organization, and in the United States as well.

The delegates representing 20,000 air line pilots from 30 free-world countries all were high in their praise for the standards of Bogota's new airport.

Sayen was re-elected president of IFALPA for the sixth consecutive term. Other officers are: Capt. M. Miles, British Air Line Pilots Association, deputy vice president; Capt. E. A. Jackson, Irish Air Line Pilots Association, secretary; Capt. W. F. Bellink, Holland, treasurer; Capts. William Masland, F. T. Sterling, Jr., and D. L. Leonard (ALPA); L. Arthur (BALPA); A. Trujillo (ACdeAC); J. Rivalant (SNPL); S. Tourcomanolis (HALCA); J. Foy (CALPA); A. J. O'Brien (ALPAP), and J. Morton (AAPA).

Digest: Sixth Annual Air Safety Forum

THE FULL significance of the jet age in civil aviation revealed itself with full force at the Sixth Annual ALPA Air Safety Forum in Chicago last month.

In every panel discussion, in committee sessions, and in general conversations, the more than 200 air line pilots, representatives of the industry, military and government, the words "jet age," were constant.

The impelling subject found its way into the pilot training, traffic separation and airspace utilization, runway requirements, mid-air collision prevention, and the featured speaker at the annual ALPA Air Safety Forum dinner included it in his remarks. It was mentioned in the panel discussion on the CAA and CAB's enforcement policies as regarding safety in the air.

Central air safety chairmen, regional and area safety chairmen, airspace subcommittee chairmen, the Air Traffic Control committee, and the new plane evaluation committee, all had interest in the jet age during their discussions on the first day of the sessions.

Pinpoints Theme

In his address opening the formal panel discussions, President Clarence N. Sayen pinpointed the theme of the forum by appealing to the "entire aviation industry," to mobilize all its resources on "aviation's currently most critical operational problems."

Sayen listed these three critical areas:

1. Air Traffic Control and the closely allied mid-air collision problems.

2. Proper pilot training.

3. Adequate runway requirements for jet age airports.

He said the pilots were facing the problems with more confidence, however, than a year or two ago when they were still fighting to gain recognition of the forthcoming jet age situation and the essential fact that problems existed.

This recognition has now been extended, he said, federal funds have been allocated, and a government research agency (the Airways Modernization Board), established to do research.

The questions now existing, he declared, are: (1) How far can we go technically in providing positive and safe separation of air traffic under all conditions, and (2) How far are all elements of the aviation industry prepared and willing to go to take full advantage of the ultimate in technical possibilities?

Training Obsolete

"Pilot training," he said, "has always been important, but is even more important today to properly prepare pilots for jet operations.

Pres. Sayen

"The old concept, which amounts to on-the-job training for some pilots is obsolete," Sayen said. "It is becoming necessary to devise and apply certain firm minimum requirements and essentials for both initial and recurrent training of pilots."

He revealed the Association had established a study committee which had made a complete and exhaustive study of this and would soon make a comprehensive report and recommendations concerning it. Industry cooperation is, nevertheless, going to be essential, he added.

Sayen declared that "adequate runway requirements on the nation's airports pose what may prove the greatest barrier to full scale jet operations at an early date.

PANEL CHAIRMAN on pilot training at Air Safety Forum was Capt. E. R. Watson (EAL), shown above at rostrum.

THE SIXTH ANNUAL Air Line Pilots Association Air Safety Forum opens in Chicago with Capt. Grant LeRoux (PAA), first vice president of ALPA, and industry representatives.

"The need for other airport improvements aside," he continued, "runways constitute the heart of the airport and, in many respects, the entire airways system. Even though we can obtain maximum capacity technically from an airways system, we cannot move any greater volume or type of aircraft through the airways than the runways at both ends will permit.

"Some airports which are just now comfortably able to accommodate conventional piston-engine aircraft," Sayen said, "are now faced with jets.

Industry Responsibility

"The present airport situation," the ALPA president declared, "is not entirely the fault of the municipalities providing them. The aviation industry must shoulder its share of the responsibility by failure to agree on specifications.

"The aviation industry," he said, "must provide community guidance in airport specifications to prevent the building of beautiful-looking, but operationally deficient airports.

Capt. Ed Watson (EAL), chairman of the pilot training panel, continued the jet age theme when, in part, he said:

"Greater responsibility and liability are being placed upon pilots. Under the CAR, the pilots, as the direct operating representatives of the carrier are responsible for the safety of the flight.

"In the short period of 15 years we will progress from the 160 mph, 21-passenger DC-3 to the 550-600 mph, 150-200 passenger jet."

His pilot training committee reported to the forum delegates:

"The CARs charge each carrier with establishing a training program sufficient to insure that each crew member is adequately trained to perform the duties to which assigned. These regulations are minimums and are subject to loose interpretation. Therefore two extremes exist in the interpretations of the CARs from one carrier's $5 million centralized installation to only the paper programs in some cases.

Weaknesses

"There are three areas of weakness in most programs.

"1. Initial hiring training. Most of the industry is still using the pre-war technique of three landings and three take-offs in a two hour training flight and then turning the new pilot over to a line Captain for 'on-the-job,' training. It is difficult for the committee to see how even the minimum CAR requirements can be met in a two hour training flight.

"2. Co-pilot check-out in other equipment, usually from twin engine to four engine. Even those carriers who do a good job on initial hire training fall down in this area. Because of cost of operation of four engine aircraft, only two hours transition is given. Again the co-pilot returns to the line for 'on-the-job,' training.

CAPT. L. H. MOUDEN (BNF), ALPA runway performance chairman, tells of runway requirements from a pilot's standpoint.

president of ALPA, at the rostrum. A total of 21[illegible] pilots, government, military, and industry representatives were registered.

THE PILOT'S viewpoint on CAA and CAB's enforcement policies are reported by Kay McMurray, executive vice-president of ALPA.

"3. Concentration of systems training in third crew member with the minimum systems training given to two pilots, CAR (40.261d), requires one other member of the flight crew to be sufficiently qualified as flight engineer to function in this capacity in an emergency.

"It is difficult for the committee to see how this CAR can be met under present training programs when the pilots receive one-tenth the training on system. Where there is a separate flight engineer panel provided very few pilots are given the opportunity to train at the panel.

"Not only is CAR 40.261d not met but the Captain of the aircraft has insufficient knowledge of the systems to make an intelligent decision when the normal progress of the flight is interrupted due to a malfunction.

"This concentration of training in one man has led to specialization and division of duties rather than co-ordination of duties among the three crew members.

No Fail Safe Crew

"The three areas of training deficiency cited above do not allow for physical incapacitation of any crew member, or provide for a 'fail safe crew.' The minimum training given co-pilots and the 'on-the-job,' burden placed on the Captain does not allow for the Captain to become incapacitated.

"Today's higher speeds and air traffic control requirements make a minimum of two pilots necessary for safe conduct of the flight in high density areas. Therefore, the presence of the co-pilot even though poorly trained is mandatory. The concentration of mechanical system training in the third crew member makes his presence necessary to cope with some mechanical malfunctions for which the pilots are not trained.

"In planning for the jet age some carriers are increasing their training budgets to include improved training facilities with emphasis being placed on simulators. Training practices will remain the same, however, unless ALPA's 'fail safe,' philosophy is adopted.

"Adjustment to the 'fail safe,' pilot crew is a natural progressive step with the elimination on the turbine powered aircraft of many mechanical controls now found on reciprocating engine aircraft. On the other hand greater demand will be placed on pilot skills as aircraft performance and flight planning become most important.

"The cockpit tempo will increase as aircraft performance increases and decreases more rapidly. Instrument approaches will be initiated from high altitude. Complete pilot coordination and precision will be necessary to successfully complete a landing that begins at 20,000 feet four minutes earlier.

"The aircraft manufacturers will strive to simplify emergency operations. To render a failed system inoperative and select an alternate system the one operation gang bar method will be used or two or three logical steps will do the job as determined by human factors study.

(Continued To Page 16)

WILLIAM LITTLEWOOD, representing American Airlines, appears on panel for discussion of mid-air collision prevention.

Along the Line . . .

Here and There With Air Line Pilots at Work and Play

Capt. J. D. Smith (CAP), Receives ALPA Air Safety Award

ASK John D. Smith (CAP), chairman of the ALPA Air Traffic Control Committee, about his hobbies when he is not flying Viscounts from Newark to Memphis, and his answer will be:

"ALPA safety work."

And this avocation of Captain Smith for eight years, won him the 1957 ALPA Safety Award, an honor accorded one pilot each year for devotion to air line safety work far and beyond the normal prerequisites of ALPA members who forward the work in air safety.

The award, first won by Capt. E. A. Cutrell (AA), for his successful development of the ALPA center line approach light system, was established by the ALPA board of directors at the Fourteenth Biennial Convention which voted that one man be honored each year "in recognition of outstanding contributions by members in the field of air safety."

Capt. Smith received an appropriately inscribed plaque during the formal dinner of the Sixth Annual Safety Forum in Chicago last month, and his name is inscribed on a large plaque of similar nature in the ALPA home office.

"Outstanding Contribution"

The plaque to Capt. Smith reads: "For His Outstanding Contribution In The Advance of Aviation Traffic Control And Navigational Facilities," while the one on which his name joins Capt. Cutrell's has this inscription: "In Recognition Of Outstanding Contributions In The Advancement Of Aviation Engineering And Air Safety."

Capt. Smith was selected for the award by the Executive Committee of ALPA from a list of several candidates who have been outstanding in safety work. The candidates were nominated by the Master Executive Councils of their air lines. In choosing Smith, the Executive Committee issued the following resolution:

"Resolved that the Association present the Annual Air Safety Award for 1957, as authorized by the Board of Directors, to Captain J. D. Smith of Capital Airlines, in recognition of his many years of outstanding contributions in the field of air safety."

Capt. J. D. Smith (CAP), of Westfield, N. J., is 1957 winner of the annual ALPA Air Safety Award.

The outstanding factor in the selection of Capt. Smith for the award was (and is) his untiring work in the implementation of the "Golden Triangle," routes between New York, Washington, and Chicago on which all air line pilots fly at all times IFR, not only in the interests of safety but for better usage of airspace. Compliance with the Golden Triangle rules, started in July, 1957, already has resulted in the movement of more aircraft than ever before during the winter months and practically eliminated near-miss reports.

Qualifications

That Capt. Smith has been active in ALPA safety work for a long time is epitomized in the report of his qualifications for the award submitted by the Capital MEC. In part it reads:

"In addition to his flying, J. D. (Capt. Smith's initials and the nickname by which everyone calls him) has accepted many various responsibilities in the activities of the ALPA at the Local Council level and in the MEC.

"His work has primarily been in the the field of Air Safety; however, he has devoted a tremendous amount of time and effort to 'Schedule With Safety.' In this capacity, he has become well recognized as an authoritative spokesman for the air line pilots and is respected by the entire industry.

"One of the primary functions of the Air Safety Department is crash investigation, and this is particularly important to the individual pilot who must depend upon such representation for determining the causes of incidents or accidents.

"J. D., has personally received and investigated many cases of reported near misses, incidents, and accidents. He did a tremendous amount of work during the investigation in the First Region of the Northeast LGA accident of Feb. 6, 1953, the Italian Airlines Idlewild accident of Dec. 18, 1954, and the Northeast Riker's Island accident of Feb. 1, 1957.

"As a result of his efforts in assisting in investigating the Riker's island crash, it was brought to the attention of the CAA and the CAB the need for a Power Failure Warning System in aircraft.

Other Fields

"J. D. also has been working with various groups in the development of a Proximity Warning System to prevent mid-air collisions.

"The rapid expansion of air traffic in the past few years has created many problems directly affecting the air line pilot. The New York area, with multiple airports, high density saturation, and domestic and international operations, has been a center of difficulty for safe traffic control.

"As Air Safety Representative for ALPA in Region I, J. D., has been a potent force in representing the views of ALPA in improving Air Traffic Control.

"He is a member of the 1st Region ATC Advisory Committee which works with CAA, the aviation industry, and the Military on ATC problems. He is also a member of the Air Coordinating

Committee and the ATC and the Navigation Panel and various committees under the jurisdiction of the Panel.

"He is a member of the ALPA Air Traffic Control Study Committee which helps to work out recommendations to the pilot group for betterment of Air Traffic Control and safety, and the establishment of new ATC procedures. Some of these include the use of 'Via Flight Plan Route,' in issuing clearances and setting up the 'Golden Triangle.'

RAPCON Efforts

"J. D. is a member of Special Working Group (SWG-13) which is working out the different aspects for a 'Common System,' of Air Traffic Control. Due to his efforts on the Langley RAPCON, he was instrumental in bringing about the rescission of the directive to the Military for the control of Civilian Traffic in the Norfolk-Newport News area.

"In airport problems, J. D. has been active in the NATCC committees in setting up traffic patterns which will reduce noise complaints over populated areas. Some of these are Standiford Airport at Louisville, Ky., Newark Airport, and Logan Airport at Boston. At Newark, he also helped on the adoption of a Sliding Scale Criteria for instrument landings.

"He has assisted in getting ALPA sponsored Center Line Approach Lighting Systems at Idlewild and Greater Pittsburgh airports.

"The working conditions of controllers and the need for more controllers has been brought to the attention of the CAA by J. D., on many occasions, and he has made numerous TV and radio appearances to further the cause of air safety. He has been a speaker at ALPA Safety Forums and has appeared at various industry meetings in behalf of the air line pilots.

"Individual pilots and industry representatives have, on many occasions, complimented J. D., for his approach in furthering Air Safety."

Commendations

H. J. Reid, manager of flight operations of Capital Airlines, in recommending Capt. Smith for the Safety Award said:

"It is my opinion that his (Smith's) work for pilots and, for that matter, for the entire industry has been far beyond the call of duty for any one man.

"J. D., has shown, by both word and action, that his primary interest is the improvement of all operating procedures and regulations to the end that a safer operation in air transportation results. J. D., by his persuasive though reasonable pleasant approach to problems, is a potent force when fighting for a point that he is convinced will improve safety."

No one knows better how much time and effort J. D., has put into ALPA safety work than Mrs. Smith, whom the Captain calls "The Master." Present when he received his award at the

Mrs. J. D. Smith, whose patience and full approval of her husband's activities led to his award of the ALPA Air Safety honor.

Safety Forum dinner, she was obviously very proud of her husband, and could only say, "every minute of his efforts have been worth it tó me."

Dorothy Stuchell, secretary of the ALPA regional office in New York, also volunteered high recommendation for Capt. Smith.

She wrote:

"It is a constant marvel where he finds the time and energy for the many problems that are brought to his attention. I have never seen J. D. lose patience, get angry, or refuse help to anyone who called on him for assistance or advice."

These are some of the activities and recommendations which won the award for the big, genial 36-year-old Captain Smith and cause his remark that all his spare time is devoted to air safety work.

A native New Yorker, Captain Smith is a graduate of St. Johns University, played semi-pro baseball and basketball. He is proud of the fact that he was at one time an usher at the Polo Grounds, and had an ambition to play professional baseball.

He started flying in 1940, under the CPTP at Floyd Bennett Field. When World War II started he became an Army Air Force pilot instructor at a primary school in Florida.

At the end of the war, in 1945, he joined the then Penn Central Airlines, flying DC-3s, became a captain in 1947, and stayed on when Penn Central merged with Capital in 1948. His is the first U. S. air line to fly turboprop Viscounts.

The Smiths have five children, Anne Regina, 12; John, 10; Tommy, 8; Kathleen, 4, and Justin, 1. They live at 436 Hillside Ave., in Westfield, N. J.

International Briefs

At the Federal Council meeting of The Australian Air Pilots' Association, the Federal Councilors approved in principle a working paper and draft of the proposed claim to be made in the new year in the negotiations for the replacement of the existing agreements.

In these negotiations the Association intends to seek the operators' acceptance of the replacement of the existing method of salary payment to pilots, by a system commonly in use in the U. S. A., Canada, and accepted in various forms in other countries.

This system of salary calculation provides for a uniform basic salary for captains and co-pilots to which is added flight pay. The flight pay portion of the total salary is made up of hourly pay, being calculated according to the speed of the aircraft flown and whether the hours flown are by day or night, mileage pay being related to the speed of the aircraft and hours flown, and gross weight pay being related to the weight of the aircraft and hours flown. Additionally there will be further loadings for international flying and for other duties.

In addition to the claim regarding salaries and the method of payment of these salaries the Association will also seek improved allowances for check and training captains and the introduction of provisions covering long-service leave and sick leave.

Safety Forum Picture Album

Left, top to bottom: Delta Pilots; Capital Pilots with H. J. Reid, CAP ch. of ops.; President Sayen with Frank E. Busch, TWA v.p. ops.; E. A. Cutrell (AA), and guests at banquet; right, top to bottom: Chicago, New York and Los Angeles Helicopter pilots; Louis S. Rothschild, banquet speaker; TWA pilots and officials; ALPA V.P. Anders and Hawaiian contingent.

Forum Photo Album

From top, l. to r.: ATC committee at work and as group; Air Space Subcommittee; Regional and Area Safety Committee; V. P. LeRoux, master of ceremonies; Central Air Safety representatives; New Plane Evaluation Committee; Regional and Area Safety chairmen; Panel discussion in progress.

A Pilot's View —

CAA-CAB Enforcement Policies A Hazard?

FOLLOWING are excerpts from a paper entitled "The Pilot's Viewpoint," read at the Sixth Annual ALPA Air Safety Forum by Kay McMurray, executive vice president of ALPA, during a panel discussion on: "CAA and CAB Enforcement Policy—Does It Promote Safety Or Increase Hazard?"

"To the air line pilot, whose profession and responsibility consists of operating complex machines from point to point in the common carriage of passengers and cargo, safety is of paramount importance. Consequently, he must be thoroughly familiar with regulations applicable to his profession and is keenly interested in refining those regulations in a manner which will enhance the safety of operations.

"This is evidenced by active participation in the procedure for revising the regulations. However, with the rapid expansion of the air transport industry, many critical problems are still awaiting solution and our regulatory bodies, restricted by budget limitations and the shortage of qualified personnel, are hard-pressed to keep pace with such a rapidly growing industry. Everyone appears to be aware of these 'growing-pain,' problems and every attempt is made to make the best of present facilities with the hope that early improvement will take place.

"Under such circumstances, and with complex machines which currently travel in excess of 300 MPH—and jets coming—strict adherence to some of the current regulations becomes very difficult in view of the variable conditions which require the exercise of good judgment.

Increasing Concern

"Consistent with the pilots' interest in proper regulation, there has been an increasing concern with the manner in which alleged violations have been processed in the recent past. Whether there has been a basic change in enforcement policy is a question that the Administrator should consider. From our viewpoint, the following considerations tend to indicate that a change has taken place:

1. There has been a significant increase in the number of violations filed.
2. In most cases the penalties imposed were considerably more severe than those required under similar circumstances in the past.
3. There appears to be an increasing tendency for the General Counsel's office to depart from the recommendations of the field agent.
4. The emergency suspension provisions of the Civil Aeronautics Act have been invoked under conditions heretofore deemed less urgent.

"If there has been a basic policy change, then a serious question arises with respect to the impact of that policy insofar as the promotion of safety is affected.

"In order to appreciate the pilot's point of view, we must view the problem in the light of his knowledge and experience. The average air line pilot does not possess a complete legal background nor is he skilled in the interpretation of legal theory, crime or punishment. The prime consideration he must give to a decision in flight resides in determining an answer to the one question:

"Will my action assure the greatest degree of safety to my aircraft? This is the responsibility and while it is true that the regulations are designed to enhance the safety of his trip, and he must be familiar with those regulations, he cannot allow the rules to become a straight-jacket which direct his thoughts irrespective of the conditions under which he finds himself.

Punitive Attitude?

"Certainly rules which are designed to promote safety must be administered in such a fashion that their prime purpose is realized. The CAA must prosecute those who violate the regulations but a punitive attitude shortly becomes detrimental to air safety and the end result is contrary to the objective outlined in the statute. In the interest of promoting the intent of the law and assuring maximum consideration of safety aspects, it is believed that this area of confusion must be clarified as rapidly as possible and that a procedure must be established which will fulfill the purpose of the Civil Air Regulations and assure *the highest degree of safety in air transportation.* I suggest that an atmosphere created by punitive action will not serve such a purpose.

"The pilot group is becoming acutely conscious of a section of the Civil Aeronautics Act which has been used very infrequently in the past but has recently become more important. I refer specifically to Section 609 which is perhaps better known as the emergency suspension clause. This Section provides:

" 'In case of emergency, any certificate may be suspended, in whole or in part, for a period not in excess of 30 days without regard to any requirement as to notice and hearing.' Immediate notice of such suspension is required and a hearing must be entered as speedily as possible. However, during the pendency of such proceedings, the certificate may be suspended for an additional period not in excess of 30 days.

Injustice Possible

"While we must recognize that certain conditions might arise which make

(Continued On Page 15)

SAFETY Is Constant—Rothschild

LOUIS S. ROTHSCHILD, Under Secretary of Commerce for Transportation, was the featured speaker at the Sixth Annual ALPA Air Safety Forum formal dinner. These are highlights of his address:

"You pilots stake your lives on aviation safety measures as part of your everyday routine. Your companies run their air line operations with safety a major consideration in their normal management. Some Congressional committees continue their work on the problems through long hearings and meticulous drafting of legislation. The Department of Commerce and its CAA keeps safety uppermost in their day-to-day operations. CAB has full-time safety bureaus. The Airways Modernization Board works on long-range plans.

"Safety doesn't depend on a series of new and brilliant ideas, although, certainly, new and brilliant ideas are forever sought after and most welcome.

"Safety is, basically, the product of the professionals slugging along day in and day out, year in and year out. Safety is the product of long and especially persistent effort. Safety in the air, to the average person, is a series of accidents. Safety, to the professional, is not the words of an after-dinner speech. Safety is always.

Problems Continue

"The problems of safety have been with us for many years past. They're with us today. They'll be with us for many years in the future. It looks like it is going to take more and more effort just to keep up with the problem of safety as congestion increases. It reminds me of the fellow who went out one night to play poker and said: 'I hope I break even tonight. I sure need the money.'

"Air traffic is increasing at a tremendous rate. All indexes of aviation activity are pointing sharply upward. Last year the consumption of civil aviation fuel was two and one-half times what it was seven years ago; fix postings were three times as great; instrument approaches were three and one-half times as great.

"It would be a big enough problem just to keep up with a constant numerical increase in traffic each year, or even a constant rate of growth. But we are under the pressure of an *increasing* rate of growth. Fix postings is one measure of load on the air route traffic control system. In the first four of the last seven years, fix postings increased at the rate of 13½ per cent per year. In the last three years, the rate of increase jumped to 21½ per cent per year.

"For the measure of instrument approaches, the change was even more drastic. In the first four years of the seven-year period, instrument approaches were going up at the rate of 11 per cent per year. In the last three years, they reached the 'explosive,' rate of growth of 32 per cent per year.

"Now, as you all know, for some time our airway capacity was falling behind the needs of aviation activity. We have been stressing that we had to 'catch up,' with the need. And quite rightly so. We are still catching up. We are trying to get a little ahead, too, so that in the future we won't again be in the tough position of having to strain mightily just to break even.

New Traffic

"We knew, as did all of you, that under adverse conditions the airway capacity placed a limit on the number of planes that could fly the airways. And we suspected that there was a large volume of latent traffic that wanted to move under instrument conditions, but couldn't. That past suspicion has been borne out by later experience. For, several years ago, Congress appropriated much more money for airways, and CAA began to pour equipment and manpower into the airways. Millions of dollars worth of equipment was purchased and installed, thousands of men were trained, and the airway capacity was pushed up.

"And what happened? The latent demand for airway capacity became actual demand. Many of those who had previously wanted to fly under instrument canditions, and knew they couldn't get through, just hadn't tried. As capacity rose, and they knew they could get through in larger numbers, they tried. As a result, as airway capacity went up at an accelerated rate, so did airway use. That, it seems reasonable to conclude, is why IFR traffic has had such a great increase in rate of growth.

"I would like to interpolate, right here, that the air line safety record has continued to improve. Last year, even with the increasing congestion, the air lines had their second-best safety year in history. And I would like to add my own personal compliments to the many others you pilots so well deserve in achieving such a fine record. You are doing an outstanding job.

"The job of safety can't be accomplished by spurts, either. It's a long process. Something we start today won't show up for four or five years, even without a major foul-up. Safety in the air is just about the most important thing in your own personal lives, and in the success of aviation. Safety is no accident—it must be planned. And safety is not just now and then. Safety is always."

Safety Forum Banquet

Air line pilots, and representatives of the military, aviation industry, and the press get together at the Sixth Annual ALPA Safety Forum Banquet March 5, in Chicago. Louis S. Rothschild, Under Secretary of Commerce for Transportation, was the featured speaker. Capt. J. D. Smith (CAP), received the 1957 ALPA Safety Award for his long service many areas of air safety. Capt. E. J. Bechtold (EAL), was master of ceremonies. More than 200 persons attended the dinner.

Static Fatigue — An Ominous Hazard

By Col. William H. Byrne
Flight Surgeon,
U. S. Army Aviation School

THE pilot of an L-20 snapped suddenly erect in his seat. Another aircraft was approaching directly ahead, where, a moment before, nothing more menacing than terrain, blue sky, and white cumulus were visible. Quick evasive action averted a head-on collision.

Chances are that his trouble was static fatigue, which frequently affects aviators. This is true fatigue resulting from sluggish body function and associated changes in body chemistry. It is tiredness caused by doing almost nothing.

Static fatigue occurs during periods of relative inactivity which results in lowered body requirements, slower circulation, slow shallow breathing, decreasing metabolic activity, and a relative stagnation of body fluids. A vicious cycle is created by decreasing the physiological demands and in turn the body's response. Sleep will result unless the cycle is broken. This type of fatigue, which occurs during flight, can be aggravated by other factors, including lack of preflight rest, prolonged exposure to noise and vibrations, varying degrees of illness, lowered oxygen content inducing mild hypoxia, loss of salt, exposure to a very dry atmosphere, or poor motivation.

Happens Often

Army Aviators are familiar with effects such as drowsiness of which they are often unaware until suddenly jolted back into reality like the L-20 pilot, who was surprised to find himself facing an emergency. The condition also leads to lethargy, boredom, and loss of attention to surroundings. A particularly ominous and sometimes fatal complication is decreased reaction time.

Some of the things that can be done to make the time fly by and keep an aviator constantly alert during flight are startlingly simple. Primarily, the pilot must enjoy what he is doing. He must know at all times where he is and what routine flying is being conducted in that vicinity. If an area or route briefing is not available, he must devote some preflight time to the geography and activity along the route and study NOTAMS. He should keep busy, feeling that everything possible is being done to make the flight profitable, and one from which a deep satisfaction of accomplishment can be derived.

Many pilots simulate emergency procedures at frequent intervals. This not only fights boredom but in that flashing moment *when one must act* they accomplish necessary procedures automatically.

By all means, keep aware of everything—live in the present, this moment. Awareness will keep you in the land of the living.

Good Habits

Adequate rest is a primary necessity. Sleep at least eight hours before a long flight since inflight rest creates another difficult problem. Breathe deeply at intervals for several separate one-minute periods, and at least one-half hour before critical phases of flight, such as landing. This speeds up circulation and improves various body functions essential to the completion of the immediate mission.

Do not overeat before a long flight. Small amounts of food taken frequently prove more satisfactory in avoiding sluggishness than large amounts at one time. Cabin atmosphere is apt to be dry, so drink plenty of water, milk, and canned vegetable or fruit juices. (Tea and coffee are less desirable because they promote elimination of water.)

Exercise is a very important method of combating static fatigue. Space does not permit cockpit calisthenics, but surprising results can be achieved by toe wiggling, flexing and extending the limbs, changing position and stretching. Another method is antagonistic muscle exercises which pit one muscle group against another, such as tensing the muscles of the upper and lower extremities. All of this helps to relieve tense muscles and stimulate circulation.

Alertness No. 1

On long flights, the pilot should wear comfortable clothing to maintain adequate ventilation and body heat. He should protect his eyes from sun glare. In rough air, the seat belt should be tight enough to hold him firmly in his seat. All this contributes to combating undue tension and fatigue.

Thus, we can see that emphasis should be placed on the paramount requirement for successful flying, namely, unequivocal alertness. This must be an inherent trait fortified by a high level of endurance and tolerance in each qualified pilot. Add experience to these and the individual will be able to make the most of each flight, steadily increasing his proficiency and confidence. In short, he remains a student who works and learns throughout the flight instead of sleeping, daydreaming, and thus contributing to the circumstances which could easily lead to a mid-air collision.

U. S. Army Aviation Digest

Enforcement . . .

(Continued From Page 10)

application of this Section imperative in an industry such as ours, the injustice possible in the event of misapplication of this power causes acute concern to the pilot group. For example, it is possible under the provision for the Administrator to suspend the certificate of any pilot because of an alleged violation which might more appropriately be processed under the Civil Penalties Section.

"The argument as to whether or not an emergency existed, sufficient to warrant emergency action, would be held concurrent with the violation proceedings. In the meantime, the certificate remains suspended. Under such circumstances, the pilot, or for that matter a company, since any of the certificates issued by the Board are subject to the same power, may suffer a severe monetary loss due to the fact that he cannot pursue his profession without a license.

"If the proceedings require the entire permissible 60 days, a monetary loss in excess of that provided under the Civil Penalties Section would result. Further, this penalty would exist irrespective of the fact that the hearing had not been concluded nor guilt established. In the event the defendent is found not guilty of the violation as charged, the suspension is removed and he is free to pursue his profession.

"However, the monetary loss sustained is beyond recovery. Here we have a possibility which violates the individual's sense of justice and fair play. Certainly justice does not require a financial penalty during the hearing and in advance of the decision. Our pilot group does not object to being held responsible for violations of the regulations but it does object, *and strenuously,* to proceedings whereby a penalty is imposed without fair and expeditious hearings on the matter.

"By way of summation, we have reviewed certain areas wherein the enforcement policy, as illustrated by recent actions of the Administrator, gives rise to concern among the pilot group. It is hoped that the areas outlined will spark a constructive discussion among the participants in this Forum.

"We do wish to assure the people in our regulatory bodies that we share their interest in proper enforcement. However, procedures must be clarified and more consideration should be given to constructive penalty rather than the punitive action in the interest of promoting safety to the greatest possible degree. The pilot group is vitally interested in the furtherance of such a program. In this regard, the following suggestions appear to have merit:

5 Points of Merit

"1. The procedure by which violations are processed must be clarified and made known to interested parties.

"2. In order to assure effective enforcement in the interest of safety, the CAA safety agent in the field should possess more authority to resolve a violation problem, taking into account the views of the carrier, the pilot, and his own intimate knowledge of the practical problem.

"3. The function of the General Counsel should be more in the review area, consistent with the Administrator's responsibility, rather than the emphasis being placed on duties as a public prosecutor. The Emergency Authority should be utilized only when the public interest is in clear and imminent danger.

"5. Some consideration should be given to an appropriate method of recouping material loss when the defendent is judged not guilty under an emergency suspension."

THE AIRLINE CAPTAIN

AS SEEN BY

HIS WIFE

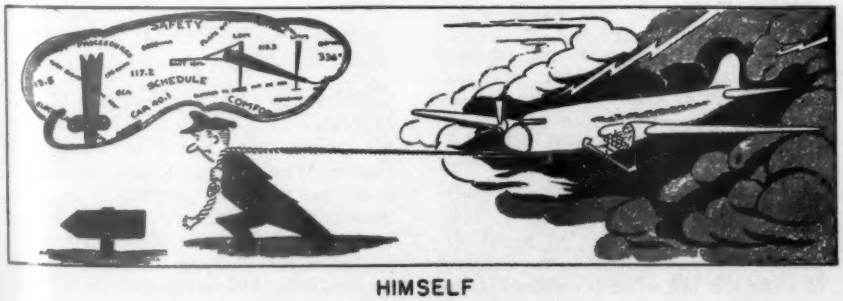
THE C.A.A.

HIS COPILOT

THE DISPATCHERS

STATION AGENTS

THE PUBLIC



HIMSELF

Sixth Annual Air Safety Forum . . .

(Continued From Page 5)

Committee Report Guide

"If the training curriculum as outlined in the contents of the committee's report is used as a guide by the carriers, many benefits will be realized by the industry. It will:

"1. Provide well trained 'fail safe,' pilot crews. Any pair of these three can function as a complete crew in case of any emergency. The 'fail safe,' concept is an inherent part of aircraft design and has contributed greatly to the considerable success of the air transport industry. Adoption of this concept as a primary objective in determining crew complement, training, and operating procedures becomes automatically mandatory.

"2. Provide an equally trained pilot crew, capable of more flexibility within the group with the elimination of a concentration of training in one man to the exclusion of training of another.

"3. Provide for concentration of training in the first three years of employment, when the pilot is at the lower end of the pay scale.

"4. Provide for more safety on the flight deck because of less 'on-the-job,' training.

"5. Insure that when the time for upgrading approaches, the pilot will be a better product, with this upgrading stage becoming routine. The pilot will have been through sufficient training to function as a systems third pilot and next will possess an Air Transport Rating for Co-Pilots for each type of equipment on which qualified. Upgrading will just require a refinement of technique and a display of 'Command' ability.

Dr. Herbert F. Fenwick, a member of the pilot training panel, read a paper prepared by Dr. Charles I. Barron of the Lockheed Aircraft Corporation, on high altitude indoctrination training for commercial air crewmen. This paper read in part:

Interest Recent

"Interest in high altitude training programs for commercial air crewmen has been only recently evoked, and stems from the imminent operation of jet airliners.

"The coming jet airliner with ceiling capabilities in excess of 40,000 feet raises a number of considerations, especially in connection with possible emergency situations, and defines possible critical exposure of air crewmen and passengers.

"Where the pilot in current aircraft has adequate time for reaction to emergency situations prior to the onset of physiological deterioration, such reassurance may not be present in the jet counterpart.

"The performance capabilities of the coming jets are such as to emphasize the need for a more formalized and controlled physiological or high altitude indoctrination program. This program should encompass many disciplines, including exposure to high altitude, speed and motion, and stresses relating to the mechanical characteristics of the new aircraft.

"It is generally agreed by aeromedical investigators that the most critical emergency will result from a loss of cabin pressure at altitudes above 30,000 feet. Under normal conditions of flight the jets will maintain pressurization at or below an 8,000 foot equivalent despite ambient altitudes of 30,000 to possibly 45,000 feet.

"Tremendous engineering effort is being utilized to insure maximum protection against the possibility of a cabin depressurization. Despite all efforts it must be assumed that a depressurization might occur some time during the effective life of an aircraft.

Explosive Decompression

"A truly explosive decompression, one occurring in less than 0.5 seconds, is extremely unlikely, but should it occur, probably would result in destruction of the aircraft, and obviously pose no major physiological problem.

"If on the other hand a window, windshield, escape hatch, or door is lost, decompression will occur at speeds varying from an estimated 4 seconds to as high as 90 seconds, depending upon the pressure differential, size of opening, and volume of cabin. Loss of cabin pressure would be extremely rapid at first and early exposure to altitude is anticipated.

Dr. Fenwick

"A pilot will be required to rapidly recognize the emergency, take the necessary protective action to avoid exposure to hypoxia, such as the donning of a mask if not worn previously in the secured position, evaluate the condition of the aircraft and effect a rapid descent. He must recognize the importance of hypoxia and must be completely knowledgeable and familiar with oxygen dispensing equipment.

"In addition to possible exposure to hypoxia following a rapid decompression, a number of other considerations relate to flight at high altitude. Of major importance are visual limitations

(Continued On Page 17)

Because a great number of panel speakers during the Sixth Annual Safety Forum made their talks without benefit of prepared papers, the Air Line Pilot cannot present excerpts of their discussions.

Enroute . . .

Capt. C. C. Dent, First Officer F. M. Nizich and Flight Engineer W. W. Fraim, Jr., are recipients of the 1957 award presented by the Flight Operations of United Air Lines for outstanding performance.

Captain Dent, Nizich and Fraim were chosen for the annual award because of their skill in negotiating a wheels-up landing at Los Angeles without injury to passengers and crew. They will receive two-week vacations in Hawaii, with all expenses paid.

* * *

Measurement of radioactivity will become a duty of CAA personnel at airports. Training for the program will be done at CAA's Aeronautical Center, Oklahoma City. Present plans are for two-week course.

* * *

Six pilots from Trans World Airlines and United Air Lines were the first in the nation to receive multi-jet training at McConnell Air Force Base, Wichita, Kan. The course was set up with the USAF by TWA and UAL to prepare for 1959 deliveries of Boeing 707. The six pilots graduated early in February, were instructed in ground school, simulators and actual flight. Their experience is to be passed on to other pilots.

* * *

Delta Air Lines President C. E. Woolman says "the traditional flow of air freight from North to South and East to West eventually may be equalized, or possibly reversed," by the movement of industry to the South and West. Last year, almost 100 new plants were relocated or built in the Southeast and Southwest.

Safety Forum . . .

(Continued From Page 16)

occurring as a result of marked reversal of the brightness-illumination ratio at altitude. This may conceivably result in some difficulty in rapid reading of data from the instrument panel and in sighting aircraft at altitude.

"It is not anticipated that in uneventful and routine flights the problem of acceleration will be of sufficient magnitude to warrant special consideration. However, the compressibility of time as it relates to human reactions is extremely important. The need for mental altertness, constant observation by the pilot, predetermination of action in the event of emergency situations, and the ability to respond rapidly are of critical concern.

No Compromise

"There can be no true compromise in the presentation of a training program of this type for commercial aircrews. All physicians and physiologists knowledgeable in this field are entirely convinced of the potential seriousness of altitude exposure.

"Consciousness times following decompressions in actual aircraft flights have invariably been shorter than those observed in controlled chamber flights, primarily because of the physical activity of the subjects and associated apprehension.

"In addition, despite considerable classroom discussions of this problem, the majority of persons being subjected to controlled decompressions, or experiencing the situation in flight, still exhibit considerable apprehension, and in a small but significant number of cases, actual confusion follows decompression.

"Apparently a single such exposure in flight, or in the chamber, gives adequate reassurance to the individual of his own personal safety and of the comparative innocuousness of the actual decompression.

"There is almost complete agreement concerning the need for physiological orientation and the belief that this training should be formalized and vigorously presented."

Lt. Col. Kenneth R. Rea, commander of a KC-135 jet squadron at Castle AFB, Calif., presented a paper on the transition of USAF pilots from propeller driven tankers to the jets. In part, he said:

Mighty Transition

"With the coming of the jet transport a mighty transition must take place not just in materiel which is needed to support the new airplane or the runways—we must also consider the thought changes that must be made in order to be successful and safe in this new high speed operation.

Col. Rea

"Our training program was designed for maximum student crew flow as well as maximum quality in the finished product. The training program consists of 11 weeks, of which the first six and a half weeks are devoted to an extensive ground school which covers all the systems of the aircraft—plus performance, jet instruments, and high altitude weather.

"Also during these six weeks the student crews commence their simulator training and receive four flights in the ersatz beast. The simulator for the KC-135 is an excellent training device which can be made to do anything which the flying model does, and more.

"This machine, being identical to its flying cousin, also gives the student confidence and the neophite learns the touch system of identifying the various controls. Also we hope that all the accidents he will have will be in the red light and bell variety for which the idiot box is so famous.

"The student learns the capability of the airplane—the procedural method of making decisions which is so necessary with high speed flight.

"After the first four simulator missions, and the ground school has been completed, the new jet jockies are ready for the flight line where he gets four more missions in the synthetic trainer and six flying missions of 7½ hours to 8 hours duration.

50 Hours Jet Time

"When this is completed our student has amassed from 45 to 50 hours of flying time and he is to the point where he is a minimum combat qualified crewman. With a standardization check ride at his home base, he can successfully fulfill his part in his squadron's mission.

"The main problem encountered by the student is the ability to stay ahead of the airplane. The first couple of missions the apprentice is still mentally on the take off roll when the airplane reaches climb speed and it is a continuous job to bring him up to and ahead of the aircraft.

"The best training device that we have found to get him leading the airplane is adequate preflight planning with a thorough knowledge of the aircraft and its systems as well as complete flight planning on the ground to include the smallest of details. By this method we find that the flying phase is made easier and the man is much more receptive to guidance that he receives in the air.

"We have been in the jet tanker business now for nine months—that is we have had airplanes that long. We started a year before the first delivery to plan for the change, using other conversions for rules and data. Conversion to the KC-135 has been highly successful.

Ron Peel, supervisor of flight operations and ground training for Trans-Canada Air Lines, talked about turbo-prop transition. Included in his remarks:

New Principles

"It's quite true that there are some new principles to learn and some old reciprocating engine habits to discard, but on the whole our Viscount training difficulties have been few."

In describing some of the fundamental differences in the transition to turbo-props, Peel said: "For those who have never handled gas turbine, let me assure you that you're probably in for a treat. If your experience jibes with ours, you'll never have had anything so simple and reliable to operate since you entered commercial aviation."

John F. Kempf, chief, air carrier operations branch, CAA Aeronautical Center, Oklahoma City, included these remarks in his paper:

"In the courses in which we stress aircraft performance, we have been known to turn Biblical when we say of performance: 'Sow this good seed in training, test the fruit in flight checks, and reap the harvest in safe operation.'

"To apply this philosophy to the air lines, the opportunity for sowing the good seed presents itself in the initial pilot training programs, the up-grading training, the transition to new equipment and the recurrent training.

"The fruit is tested in the Air Line Transport Pilot certification flight test, the Type Rating flight test, and time and time again in the Proficiency Checks. And let us not leave out the Line Check. In other words, these are yardsticks to measure the effectiveness of the training. The harvest we hope to reap is efficient and safe operation.

Training Tap Root

"The tap root is still training, be it in the airplane, the aircraft simulator,

CAPT. E. A. CUTRELL (AAL), panel chairman for Air Safety Forum discussion of runway requirements for air carrier operations, gives paper on ALPA views.

the classroom, or in 'required reading,' as we used to say in school.

"The airplanes we operate today weigh literally tons, and regardless of the pilot's weight or his physical strength, the airplanes will only do so much. They are built to do so much. The performance determined in the certification flight tests and the procedures for duplicating this performance in operation are 'in the book!'

"The jets will be with us soon. We must use the book!"

Capt. J. D. Smith (CAP), chairman of the panel on Positive Traffic Separation and Airspace Utilization:

"Insofar as communications are concerned, the traffic control system is a hodge-podge collection of compromises. These compromises are brought about by the fact that the controlling agency is incapable of executing efficient co-ordination and must resort to strict regimentation of traffic flow which always assumes the presence of conflicting traffic. This is a waste of airspace. However, it does result in presently providing the most expeditious operation.

"Increased implementation of VHF ground based navigational equipment is providing additional controlled airspace which further antagonizes the existing co-ordination deficiencies. Hence, it becomes necessary to expand the Preferential Routing philosophy, which precludes more efficient use of airspace.

Point Of No Return

"The consistent adding of manpower and manual equipment can only result in eventually reaching the point of no return merely because of the increased difficulties related to co-ordinating. In some areas this condition has arisen to the stage where pilots have considerable difficulty obtaining the necessary service so as to avoid turbulence, icing or other undesirable conditions.

"Controllers are often times so overtaxed with normal routine duties that they are unable to provide expeditious alternate routings because this action would result in falling behind monitoring the rest of their area. This is particularly true where radar is feeding enroute AMC procedures.

"Preferential routings have provided substantial assistance to increasing traffic flow, but not without creating some undesirable conditions. For example: Preferential Routings often times result in the IFR aircraft being at the wrong altitude for direction of flight. Consequently procedures actually require aircraft to be at the same altitude while heading in opposite directions. Attempts are being made to overcome this inequity and it is hoped satisfactory solutions will appear at the earliest possible date.

"Preferential Routings have further antagonized terminal traffic flow. This philosophy has resulted in lengthy clearances, remaining at low altitudes too long when departing and being at unnecessary heights while approaching an airport."

Capt. Smith on airports:

Inadequate Airports

"Today the most serious obstacle to orderly expansion of commercial aviation rests with inadequate airports. The present traffic control capacity surprisingly surpasses any airport capability in the United States. An even greater ATC capacity will not be too beneficial because maximum utilization of same will not be realized due to deficient airports.

"In view of the fact that airports are not developed overnight this deficiency creates the utmost concern. Furthermore, with jet operations almost upon us and realizing this equipment will in many cases place further demands on airports the outlook becomes even more serious.

"Long range planning could very easily defy the imagination of the most ardent aviation enthusiast. From ALPA's standpoint we have long since established requirements which the pilot group believes the future traffic control system should meet. They are:

"1. The system must provide at least 60 landings and 60 takeoffs per hour on dual runway airports. The system must be capable of double this capacity in event of military emergency.

"2. The system must provide full, non-interfering use of airports as close together as those presently used in the New York area.

"3. The system must allow flights to climb, cruise and descend within the normal best performance ranges of the various aircraft types.

"4. When the flow of traffic to a runway has been interrupted by weather or other causes, the system should be capable of absorbing the interrupted flights in safe holding positions. When the runway is reopened, the system should be capable of re-establishing a full flow of traffic to the runway, in approximately the original priority order, within four minutes.

"5. Provision must be made to divert flights singly or in groups from one airport to other airports at the request of the pilot or aircraft operator and without requiring advance notice.

"6. Overshoots, aircraft needing to return after takeoff and other emergencies must be fed back into the landing stream without delay to such aircraft and without reduction of the full rate of traffic flow to the runway.

"7. The ATC System must be capable of feeding jets into the final landing operation from at least 20,000 feet.

Mix Jets And Props

"8. Jets and piston types must be mingled in the landing sequence with no reduction in the landing rate.

"9. Where a single runway must be used for both takeoffs and landings, the system must be capable of opening up precise intervals in the landing stream for takeoffs. It should not require more than four minutes advance notice to open an exact interval in the landing stream for a takeoff.

"10. Whenever delay in the system is unavoidable and can be predicted in advance, the system should allow the pilot to: 1. Take the delay on the ground prior to takeoff; 2. Take the delay by cruising slower enroute; or 3. Take the delay by cruising at normal speed and holding in a free area near the terminal area of destination.

"11. The system must not suffer a loss of safety, capacity or efficiency on reaching saturation, whether such saturation is caused by an excess of traffic demand or by an unexpected reduction of runway capacity. In other words, the system must inherently prevent any tendency to form a log jam.

"12. The system must handle aircraft that do not have the necessary airborne end of the new system. The new system must provide operational advantages in proportion to the number of equipped aircraft."

J. B. Hartranft, national president of AOPA, on the same panel included the following remarks in his paper:

"One of AOPA's objectives is to obtain a maximum utilization of the airspace. This is an objective we all share. For this reason, we in AOPA have been striving to alert both Government and industry to the urgent need for recognition of the problems of general aviation and particularly how those problems will affect the air traffic control system, if adequate planning is not done now.

AOPA Views

"Briefly, this group, operating as the General Aviation Facilities Planning Group, opposed the proposed increase in ceiling and visibility minimums in high density zones, opposed the removal of the controller's authority to permit VFR operations in a control zone under local restrictions

Hartranft

E. R. QUESADA, chairman of the Airways Modernization Board and American aviation pioneer, discusses planning for positive air traffic separation.

to visibility down to one-half mile, opposed removal of the controller's authority to approve deviation from a standard instrument approach, and opposed the proposal to permit the Administrator of Civil Aeronautics to vary the floor of the control areas throughout the country from 700 feet upward.

"The GAFPG also made a proposal that the floor of the control areas be raised to at least 2,500 feet above the ground. Under this proposal, the minimum instrument flight altitude would be at least 3,000 feet, and uncontrolled flight could operate up to within 500 feet of this level, using the same rules that we now have for operating below 700 feet.

"Combining efforts in 'watch dog,' operations such as this—and there have been numerous other examples—is a pattern we should like to pursue jointly with you on a much wider scale in the future.

"Your organization represents pilot personnel at the controls of all U. S. air line aircraft—our organization represents pilot personnel at the controls of approximately 82 per cent of the general aviation fleet of business and private transportation aircraft. Together, we represent the vast majority of men and women at the controls of American civil aircraft.

"I submit, if we can operate in unison as a team on these vital airspace problems, resolving our differences in private, and if we can use our combined strength reasonably and constructively, we will constitute a formidable force to bring good programming into being and to resist bad, inadequate or discriminating planning or implementation."

Capt. E. A. Cutrell (AA), was panel chairman for the subject, "Runway Requirements For Air Carrier Operations." Excerpts from his paper are:

"Much has been said and written about runway and airport requirements for the jet age. There still remains a number of problems to be solved and questions to be resolved that concern these requirements. This panel is going to deal with some of these problems so that you here may review them again and contribute to finding the right answers.

"There is a huge airport improvement and modernization program under way at this time, involving some 39 major airports. This program is estimated to cost 200 million dollars and be accomplished in the next 24 months. All but one of these airports and 31 others are programmed by the air lines for use in regular or alternate jet operation by September, 1960.

Many Questions

"Each one of these airports would like answers to many questions of runway orientation, runway length and strength, configurations of narrow gauge flush lighting, flood lighting and effective marking; high speed taxiway exits; and taxiway curvatures; and improved systems of flow for take-off, landing and ground movement of traffic.

"The Airways Modernization Board is planning an airport research program to fulfill its responsibility in developing and modernizing the national system of navigation and traffic control facilities for the present and future needs of civil and military aviation. These facilities include the public airports and military bases excluding those facilities on the airport which do not directly affect aircraft operations.

Capt. Cutrell

"Many of our airports have reached a condition of traffic saturation, particularly during hours of peak operation. During these peak periods, some airports are overloaded by what appears to be their near capacity in CAVU weather. At this time it only takes one or two operating irregularities to bring on chaotic conditions of traffic flow during these high density periods. During some peak hours at Washington National Airport when operations are confined to a single runway, pilots will not relinquish their IFR clearance in clear weather until on final approach since they might be delayed waiting a turn in the VFR traffic pattern.

"At Chicago where two parallel runways are available, delays are often a result of the necessity for the larger and heavier airplanes using the longer of the two parallel runways for landing or taking off.

"At LaGuardia Airport, traffic often backs up both landing and taking off when all landing and take-off airplanes are restricted to the same runway.

Bottleneck

"Thus the bottleneck of the best air traffic control system might be the airport, itself, if ways and means are not forthcoming to increase airport capacities and relieve these present and potential saturated conditions.

"An airport research program seems important to analyze, develop and test all facets of airport operations and traffic flow problems that will increase the airport capacity.

"You air line pilots in your daily operations are the group that can best outline the airport requirements. The things you see are needed most to carry out such a program and to determine the priority of these missing links in a system of landing aids needed to prevent bottleneck in airport traffic flow."

Capt. L. H. Mouden (BNF), presented the subject, "Runway Length Requirements For Performance," in which he said, in part:

"The pilots have long been convinced that the greatest single runway deficiency lies in inadequate runway length. As little as 1,000 feet of runway length on 70 per cent of the commercial airports in the United States would provide, for most airplanes, an average increase in the operational performance margin equivalent to an 8 per cent decrease in gross weight.

"This could be accomplished with less cubic yards of hard surfacing material than is required to put a modern highway across one city the size of Omaha, Toledo, or Charleston. It is inconceivable that people who are willing to spend billions of dollars on our new road program would knowingly accept marginal operations, or compel air carriers to leave passengers at the terminal, for the lack of these additions to runways.

Capt. Mouden

Clean Runways

"Many of the other runway problems connected with jet airplane operations could be resolved while incorporating the additional runway length to existing runways. For example: it is now recognized as a mandatory requirement that jet operations will need heat resistant, clean runways—particularly in the area of the start of the takeoff roll.

"Runway design and construction, giving particular attention to the smoothness, surface texture, heat resistance and various maintenance factors in the first 1,000 feet of useable runway length, would eliminate many of the operational problems involving the use of jet aircraft.

"Aviation has already become the leading public transportation. The jet airplanes are not going to replace our present fleets—only supplement them. The time for meeting the runway operational requirements for performance of all aircraft is **now.**"

Gordon K. Ray, representing the Portland Cement Company, presented "Runway Pavement Criteria," which read in part:

"One criterion and one alone should govern the design and construction of runway pavement for air carrier operations. Is the pavement designed to meet the needs of the using aircraft under today's and tomorrow's operating conditions? No longer are we building runway pavements just to keep our planes out of the mud.

"The old reliable DC-3 may have been able to operate safely from runways of cinders, sod, pierced plank or coral, but today's aircraft and tomorrow's are a new breed of bird. No longer is it economical to design aircraft to operate from any type of runway. We must design our runway pavements to meet the needs of our planes.

"The structural design, the high landing and take-off speeds, high speed turnouts, the ground handling characteristics of the new aircraft require that more and more attention must be paid to design and construction of runway pavement. If we are to have safe all-weather operations at maximum payload, we must tailor our runways to the aircraft which will use them.

"The matter of runway lengths and widths is a little out of our field. The aircraft manufacturers, the CAA and you, the pilots, are all in a much better position than we are to determine these requirements. There is no question that they must be adequate for safe landings and take-offs, regardless of weather conditions.

Runway Aspects

"In addition to load-carrying capacity, runway pavement suitable for air carrier operations must possess certain other important properties. These properties, which are of utmost importance to operating personnel, are too often neglected by pavement design engineers who have probably never had the responsibility for landing a 250,000-pound plane carrying up to 100 passengers under minimum weather conditions.

"Skid resistance, visibility, surface contour and resistance to rolling are all important to efficient and safe operations. They must all be given careful consideration by engineers in the design and construction of runway pavement.

"In summary, I would like to reiterate the statement made at the beginning of this discussion. Runways should be designed to serve the pilots and aircraft which will use them, not just this year and next year, but five and

ten years from now. To require air carriers to restrict their operations to the limitations of a low cost, substandard runway is a bad case of the tail wagging the dog. The runway and the entire airport must be adequate for safe all-weather operations. Any alternative to this is a gamble with equipment, money and lives."

C. A. McKeogh of The Asphalt Institute on the effects of blast heat and fuel spillage on asphalt:

"There has been some question regarding the effect of blast, heat, and fuel spillage on an asphalt pavement. We have sufficient data to conclude that there will be no serious damage to an asphalt pavement by either of these in the normal operation of a jet aircraft."

Herbert H. Howell, director, CAA Office of Airports, explained the CAA's participation in airport construction and among his remarks were:

"This perhaps is the only country in the world that leaves entirely up to the initiative of the local community the full responsibility for providing its airport facilities. It is true that from time to time Federal assistance has come forward with a valid request for specific airport development after it has completed its planning and has arranged for financing of its share of that devlopment. .

Greatest System

"In general, the airport system that we have today is the product of and credit goes to the ingenuity and foresight of the leaders of the several communities throughout the United States. On this system of local ownership we have developed an airport system that has permitted air transportation in the United States to reach unprecedented heights not yet attained elsewhere in the world.

"One of the disadvantages of this system, however, is that the airport must usually compete with other municipal improvements such as streets and schools, and water works for the limited local funds that are available. Too often the airport has taken second place in this competition for funds, since local people feel that those funds should be spent on municipal improvements of a more tangible character as far as their constituents are concerned.

"The airports in this country do constitute a national system, each airport in that system being interdependent upon other airports. The people of one community are logically interested in the existence of adequate airport facilities in other communities as well

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as their own, if there is going to be air commerce between them.

"It is in recognition of this national interest that the Office of Airports of CAA maintains an advisory service, the principal purpose of which is the development and dissemination of standards for airport construction. Some of these airport standards are developed within the CAA, others are developed through the Air Coordinating Committee but, in any event, standards are adopted only after there has been full co-ordination with the industry and others affected.

"Our Washington Office is concerned primarily with the development of standards, whereas the field forces are concerned with the dissemination and interpretation of these standards as they apply to specific localities. Our principal objective is to suggest, to recommend, and to advise, seldom to require. Only when Federal funds are involved can we insist that specific standards be followed."

Herbert O. Fisher, chief of aviation development section, The Port of New York Authority, discussed the development of the new 4R-22L instrument runway development at Idlewild. His remarks included:

"One of the most interesting design features of this new runway will be the provision for high-speed taxi exits so as to increase the acceptance rate of the runway.

"As far back as 1950, the Air Coordinating Committee, through Special Work Group 5, recognized this problem in the report, 'Air Traffic Control and the National Security,' which concluded that: 'Exit points should be so designed that aircraft can comfortably negotiate the turn at the exit point at speeds up to 30 miles per hour and safely negotiate such turns at speeds up to 45 miles per hour.'

"Since that time, there have been many studies made, and many reports issued on the subject, and much discussion of whether high-speed taxi should be designed for 30, 45 or 60 knots, and angled at 30 degrees, 45 degrees, or 60 degrees, from the runway axis. But the crux of the problem is the radius of turn, rather than the angle of intersection.

60 Knot Exits

"We have, therefore, come to the conclusion that the runway exit should be designed as a curve of constant radius rather than an angular intersection. By selecting a suitable radius, the exit can then be designed to accommodate aircraft up to any desired exit speed. As a result of developments and studies in the last two years, we believe exits should be designed to accommodate aircraft at speeds up to 60 knots.

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"Instrument Runway 4R-22L will be the world's first commercial runway equipped with high intensity approach lights and condenser discharge sequence flashing light at both ends, high intensity flush narrow gauge runway lights, which will eliminate the 'black hole,' you now face after crossing the runway threshold during an instrument landing, flush centerline lights beyond the narrow gauge lights, and flush taxiway exit centerline lights. It also will have conventional elevated edge lights spaced at 100 foot intervals as at Newark Airport (compared with a 200 foot interval called for by the CAA standards), and taxiways will be lighted with blue vertical columnar lights developed by the Port Authority to give better guidance for high speed taxiing.

"The new runway will be equipped with bi-directional ILS and, initially on Runway 4R, though possibly later also on 22L, with a transmissometer and ceilometer for accurate end-of-the-runway weather information, and precision approach radar. New York International Airport, which as you know is one of the best equipped in the world, already has: dual ILS and dual high intensity approach lights; precision approach and airport surveillance radar; automatic transmissometer and ceilometer equipment; and, the latest taxiway marker signs, and taxiway and runway lights, as well as the country's first airport surface detection radar. It also has located on it the regional air

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"Instrument Runway 4R-22L will set new standards of safety and efficiency for instrument landing runways throughout the world."

Capt. L. Abel (CAP), in making the report on the sessions of the Airspace Subcommittee Chairmen, said in part:

"From past experience we know that ALPA's voice will go unheard if we continue to participate in activity on airspace usage as we do at present. The services of one or two line-pilots working in their spare time is not the answer. The Washington Panel now meets three days per week. On some of these committees we are amateurs thrown in with a pack of wolves. Haphazard, part time participation only decreases ALPA's stature in the eyes of the wolves.

"I recommend that: ALPA add additional Headquarters air safety representatives to the staff. It is possible that the services of our legal staff may also be needed on a part-time basis to participate in public hearings and appeals to the Board.

"In addition, the services of more line pilots, both in Washington and the regions, are needed for consultation and advice by these 'professional committee sitters.' Much of the valuable contributions of ALPA should be done at the 'grass-roots,' in the Regional Subcommittees and local air traffic control comittees. This entails not only more active pilot participation, but some loosening of the purse strings on flight-pay-loss."

Capt. H. Miller (AAL), set forth the following suggestions and recommendations from the report of the Regional and Area Safety Chairman:

"It would be well for not only the safety committees, but every air line pilot to jot down his comments, criticisms, and suggestions for improvement of safety in the daily operation through airports on his air line route structure. Machinery is available in the ALPA Safety Structure for processing these problems or suggestions.

The following are examples for suggestions:

(a) Runway Surfacing and Markings.

(b) Obstructions.

(c) Known Hazards Existing or Programmed.

(d) Approach and Runway Lighting.

(e) Taxiway Lighting.

(f) Fire Fighting Equipment.

(g) Programmed Extensions and Overlay to Meet the Demands of the Jet Age.

(h) CAA and Local Planning to Meet the Increased Demand of Air Traffic Control Functioning at Peak Performance.

(i) Standardization of Runway and Taxiway Lighting.

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